Park Euclid WQARF Site
Record of Decision and Next Steps
September 15, 2021

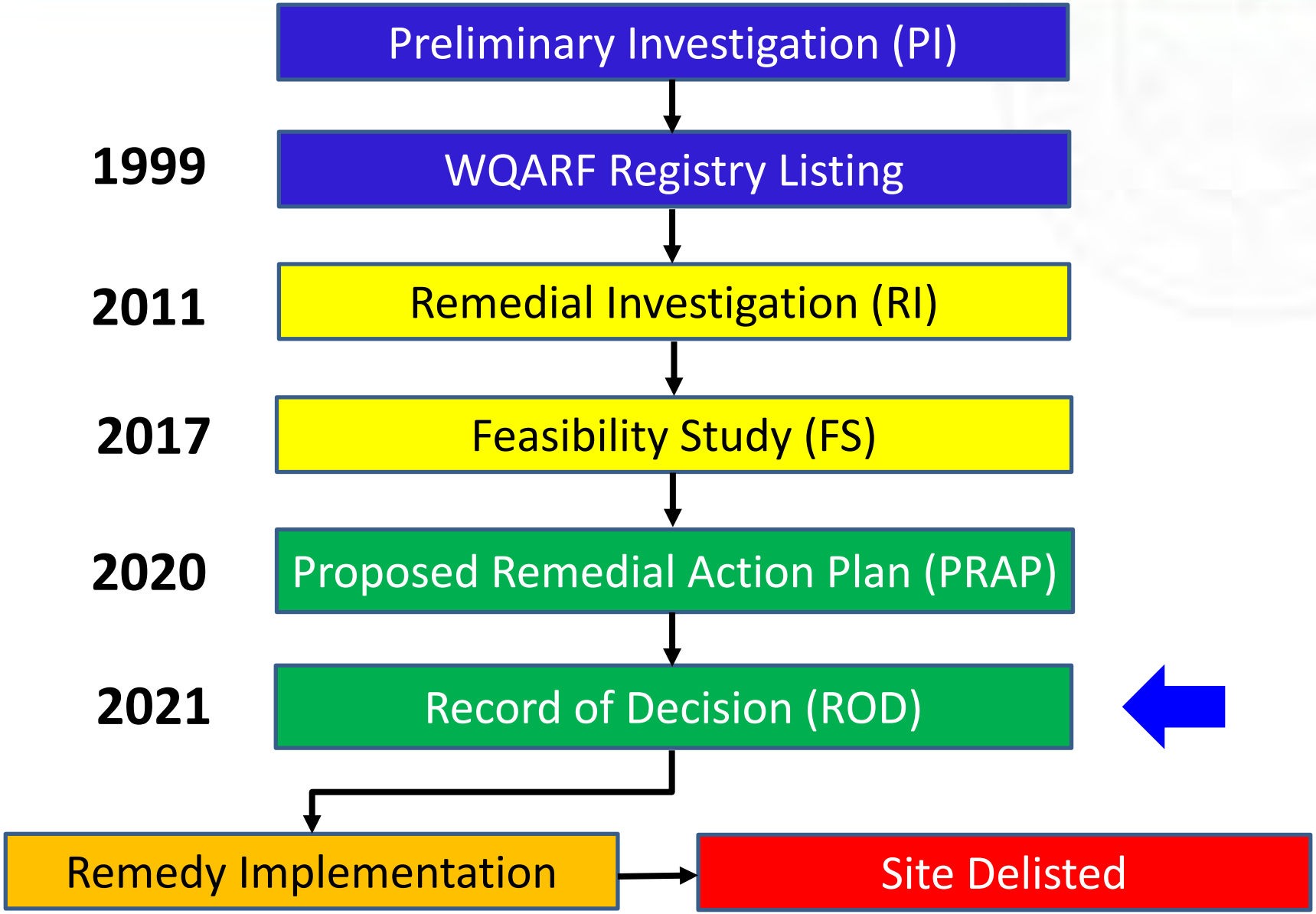
Community Advisory Board Meeting

ADEQ
Arizona Department
of Environmental Quality

Overview

- WQARF Process
- Site Background
- Remedial Objectives
- Selected Remedial Technologies
- Summary

WQARF Process



Site Location Map

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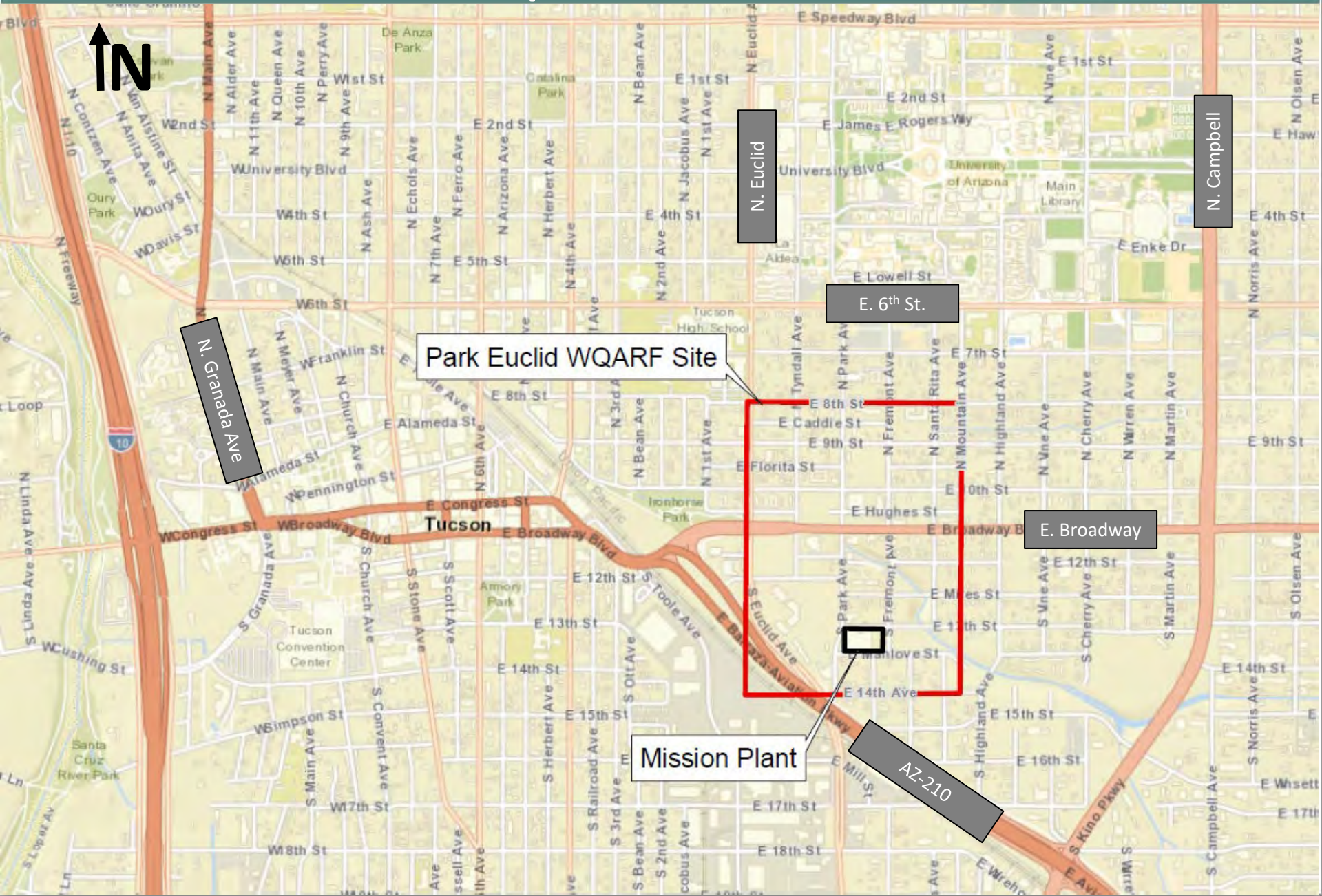
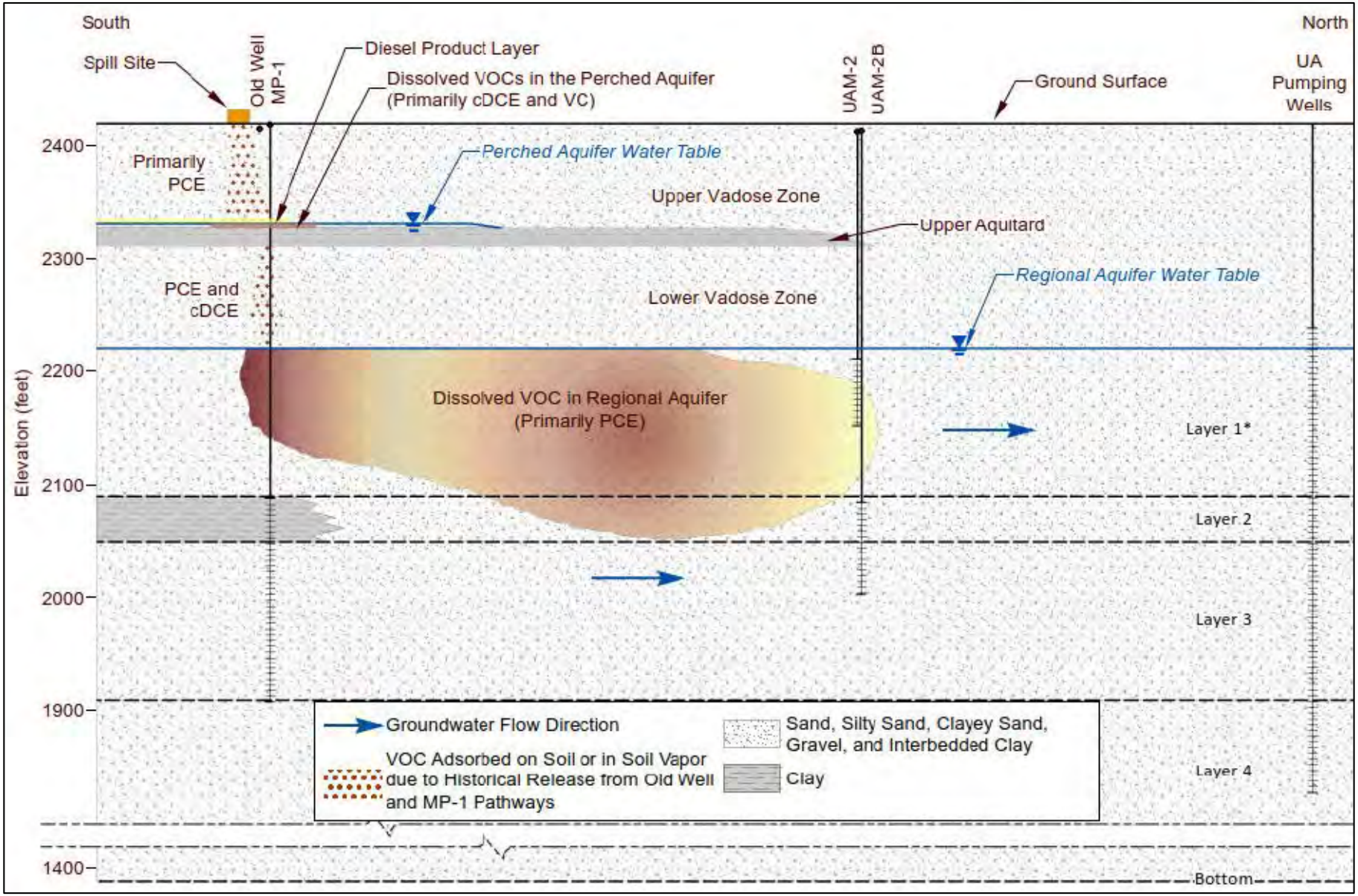


- Contaminants of Concern (COCs):
  - Tetrachloroethene (PCE)
  - Trichloroethene (TCE)
  - cis-1,2-dichloroethene (cDCE)
  - trans-1,2-dichloroethene (tDCE)
  - Vinyl Chloride (VC)

- Site Stratigraphic Zones:
  - Upper Vadose Zone (UVZ)
  - Perched Aquifer (PA)
  - Lower Vadose Zone (LVZ)
  - Regional Aquifer (RA)

Conceptual Site Model



Remedial Objectives (Clean-Up Goals)

- Soil: To restore soil conditions to the remediation standards for non-residential use for the COCs identified at the site.

- Groundwater: To protect for the use of the groundwater supply by the University of Arizona from contamination from the site, and to protect potential future use of the groundwater supply.

Selected Remedial Technologies

- Monitored Natural Attenuation (MNA) for:
  - Upper Vadose Zone (UVZ)
  - Perched Aquifer (PA)
  - Regional Aquifer (RA)
- Soil Vapor Extraction (SVE) for:
  - Lower Vadose Zone (LVZ)
- Contingency for wellhead treatment if Tucson Water or University of Arizona wells become impacted by the groundwater plume.

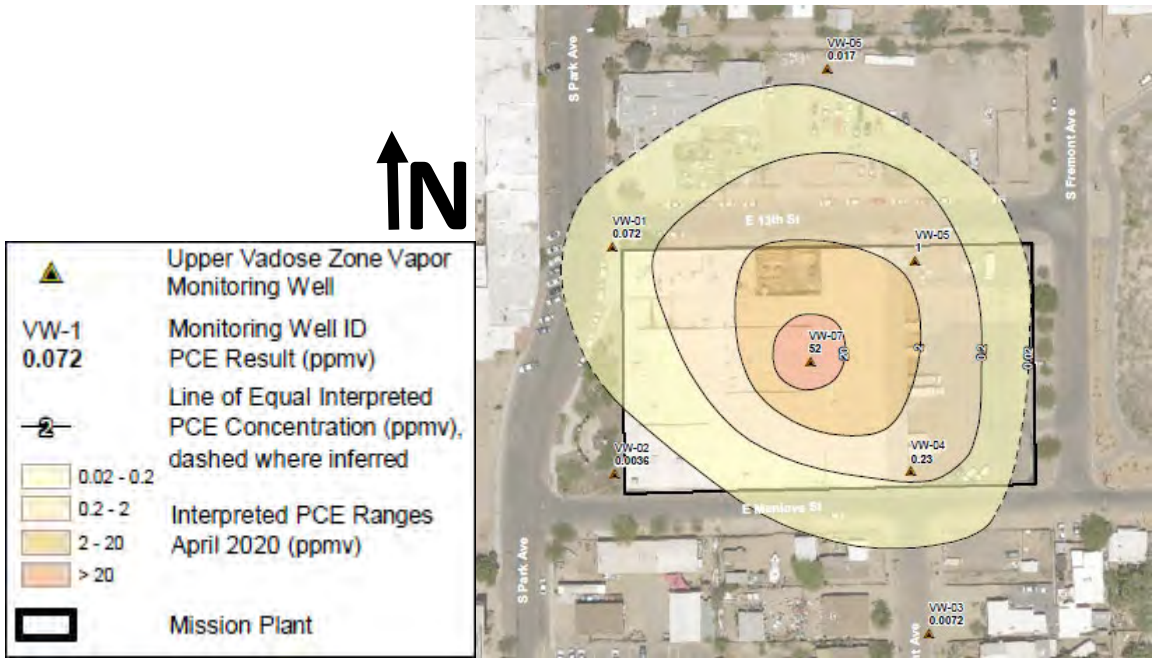
- Monitored Natural Attenuation:
  - Relies on natural processes to decrease COC concentrations.
  - Involves routine monitoring & sampling.
  - Data is used to evaluate plume migration, plume stability, & natural attenuation of the plume.

- Soil Vapor Extraction:
  - Utilizes extraction wells deep into the contaminated soil above the water table.
  - A vacuum is applied and vapor is extracted through these wells to the ground surface and treated.
  - Data is used to determine if asymptotic levels have been attained.

Remedy Details

Upper Vadose Zone: Monitored Natural Attenuation

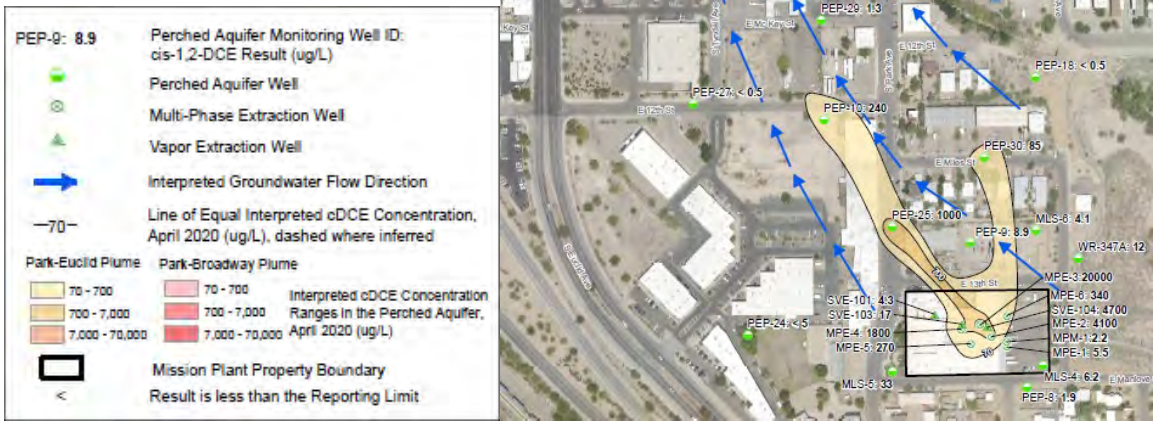
- 34 monitor wells to be sampled on bi-annual basis for up to 5 years.
- After 5 years, the number of wells will be evaluated and adjusted as needed.
- MNA up to 15 years or until the concentration is below the residential soil remediation level (SRL).



Remedy Details

Perched Aquifer: Monitored Natural Attenuation

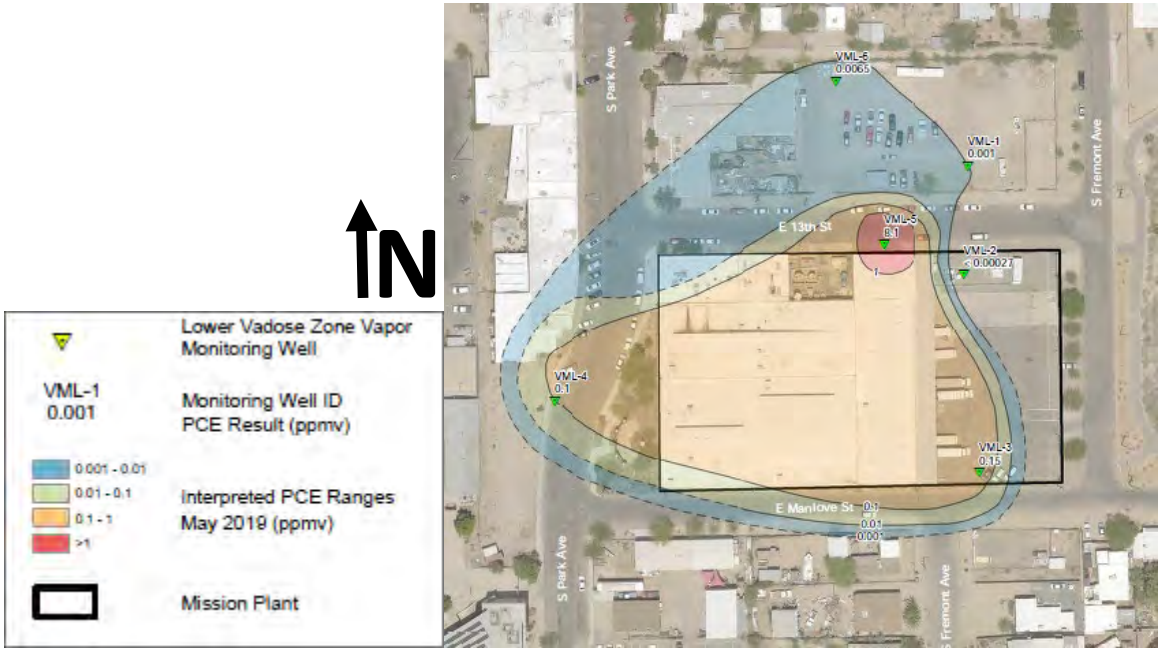
- Up to 34 monitor wells to be sampled on an annual basis for up to 5 years.
- After 5 years, the number of wells will be evaluated and adjusted as needed.
- MNA up to 30 years or until the concentration of COCs no longer impacts attainment of the site remedial objectives.
- One year of semi-annual monitoring will occur to support the conclusion of MNA activities.



Remedy Details

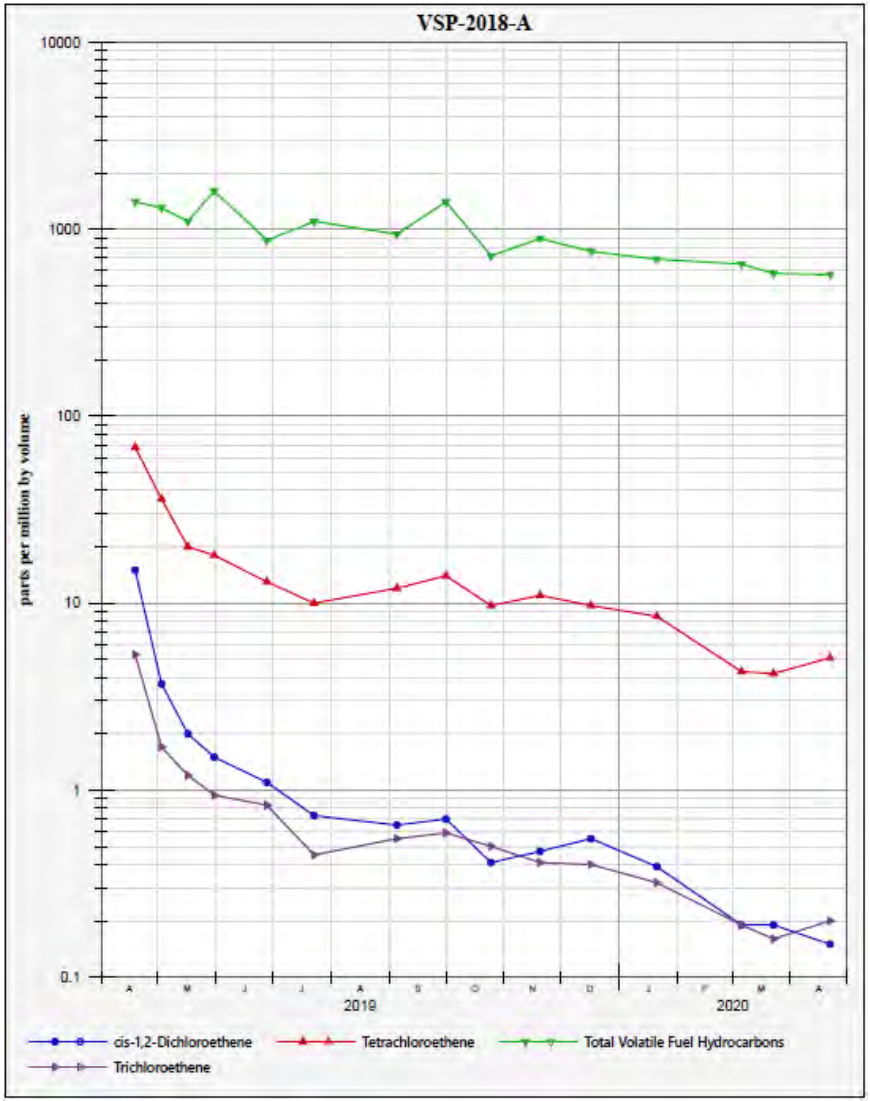
Lower Vadose Zone: Soil Vapor Extraction

- SVE system already installed as an Emergency Response Action (ERA).
- SVE will continue to operate for 10 month periods and then shut down each year for 2 months to allow rebound monitoring.
- Up to 26 sample ports will be sampled on a semi-annual basis, one during operation and one during shut-down.
- SVE operation and monitoring is estimated to take up to 7 years, but this is dependent on system performance.



Remedy Details

Time vs. Target VOC Concentration LVZ SVE Influent



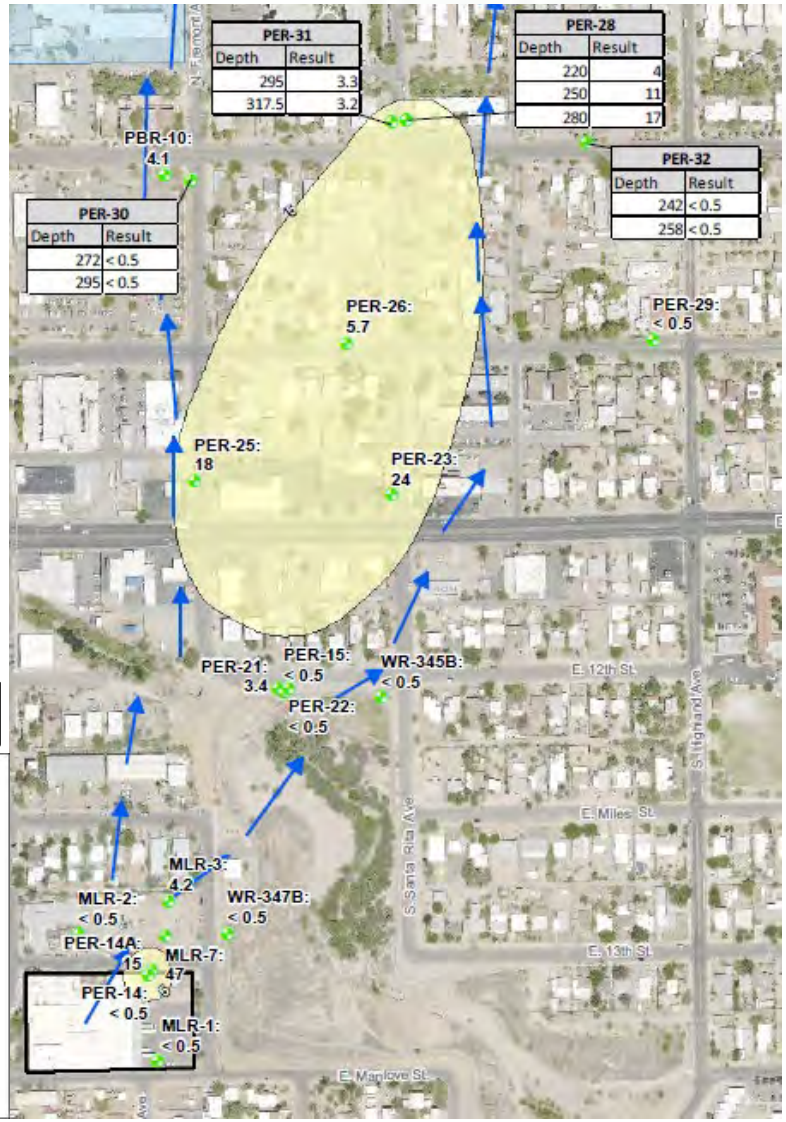
Reference: 2020 Long-Term Monitoring Report (URS, 2020)

- Routine SVE operation began in April 2019 and was performed until April 2020.
- 415 pounds of target VOCs have been removed from the LVZ during this time.

Remedy Details

Regional Aquifer: Monitored Natural Attenuation

- Up to 25 wells to be sampled on a biennial basis for up to 30 years.
- On years where a full sampling event does not occur, samples will be collected from four University of Arizona “sentinel” wells.
- One year of semi-annual monitoring will occur to support the conclusion of MNA activities.
- Groundwater monitoring data will be used to trigger wellhead treatment contingency.



Summary

- Proposed Remedy:
  - Meets Remedial Objectives.
  - Consistent with Current & Future Land & Water Use.
  - Protects Public Health & the Environment.
  - Provides Control, Management, & Cleanup of Contamination to Allow Maximum Beneficial Use of the Waters of the State.
  - Is Reasonable, Necessary, Cost-Effective, & Technically Feasible.

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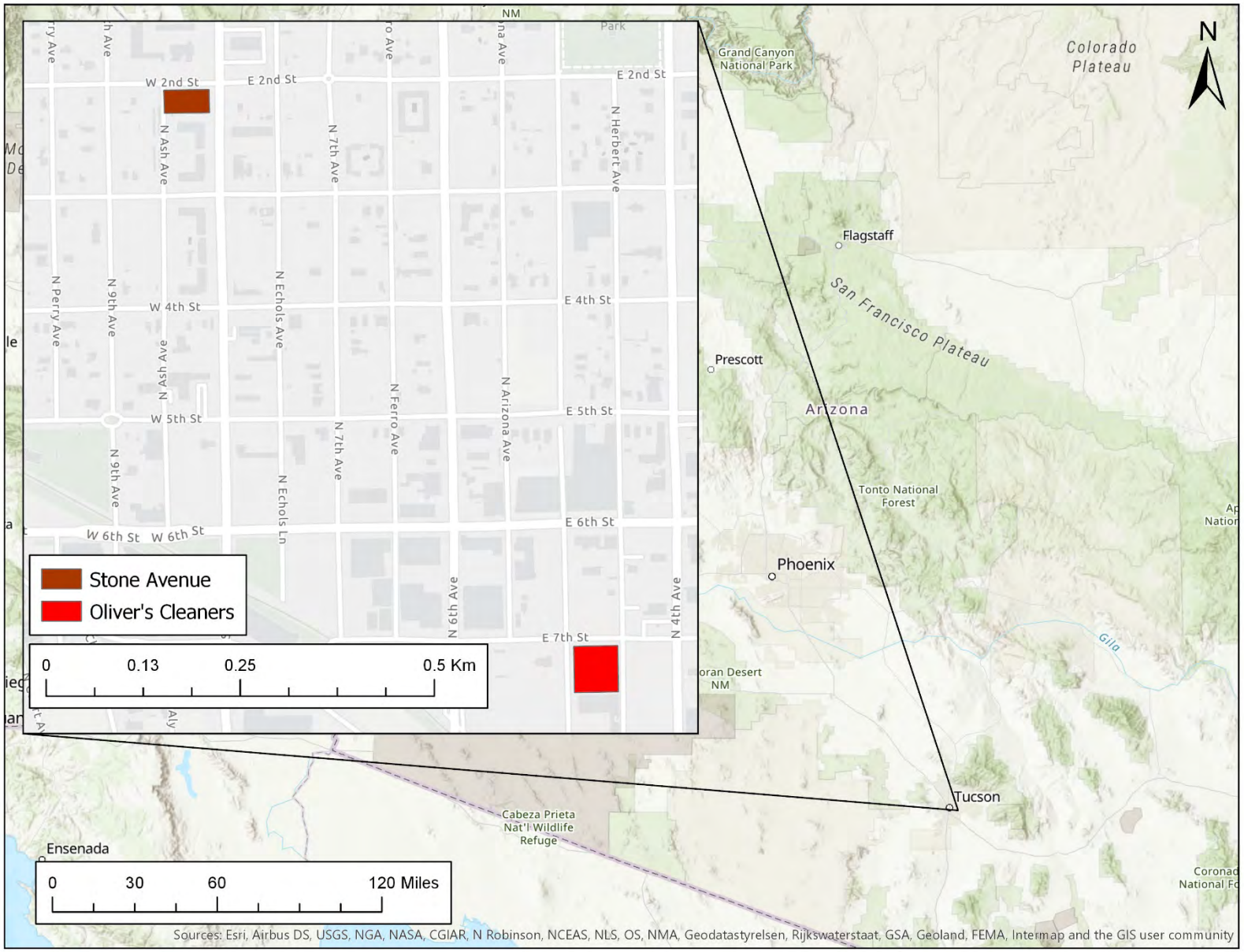
7th Street and Arizona Avenue WQARF Site Update

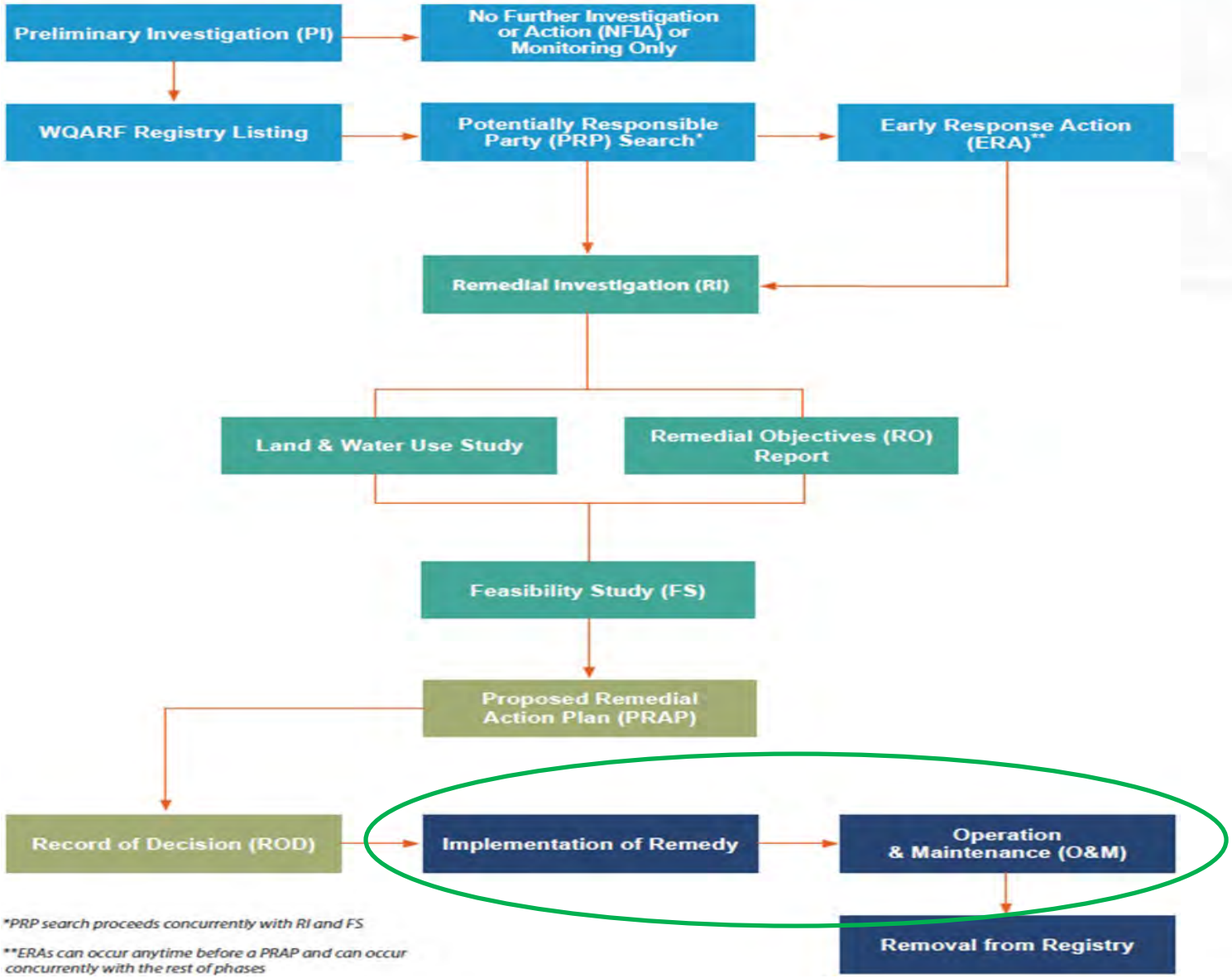
Joshua R Campbell, EIT
Project Manager/Remedial Projects Unit

ADEQ Arizona Department of Environmental Quality

7th Street and Arizona Avenue Source Areas



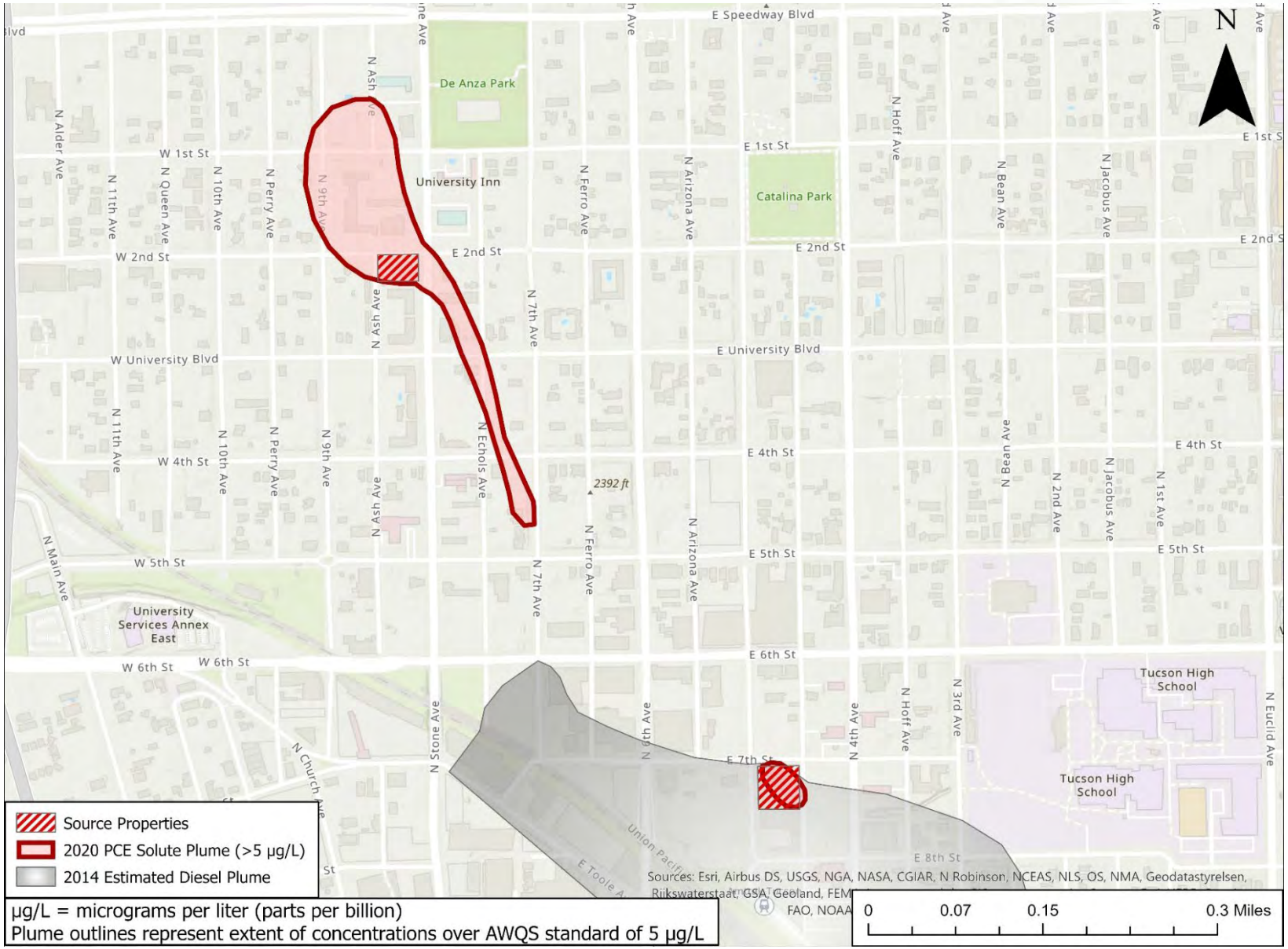
WQARF PHASES



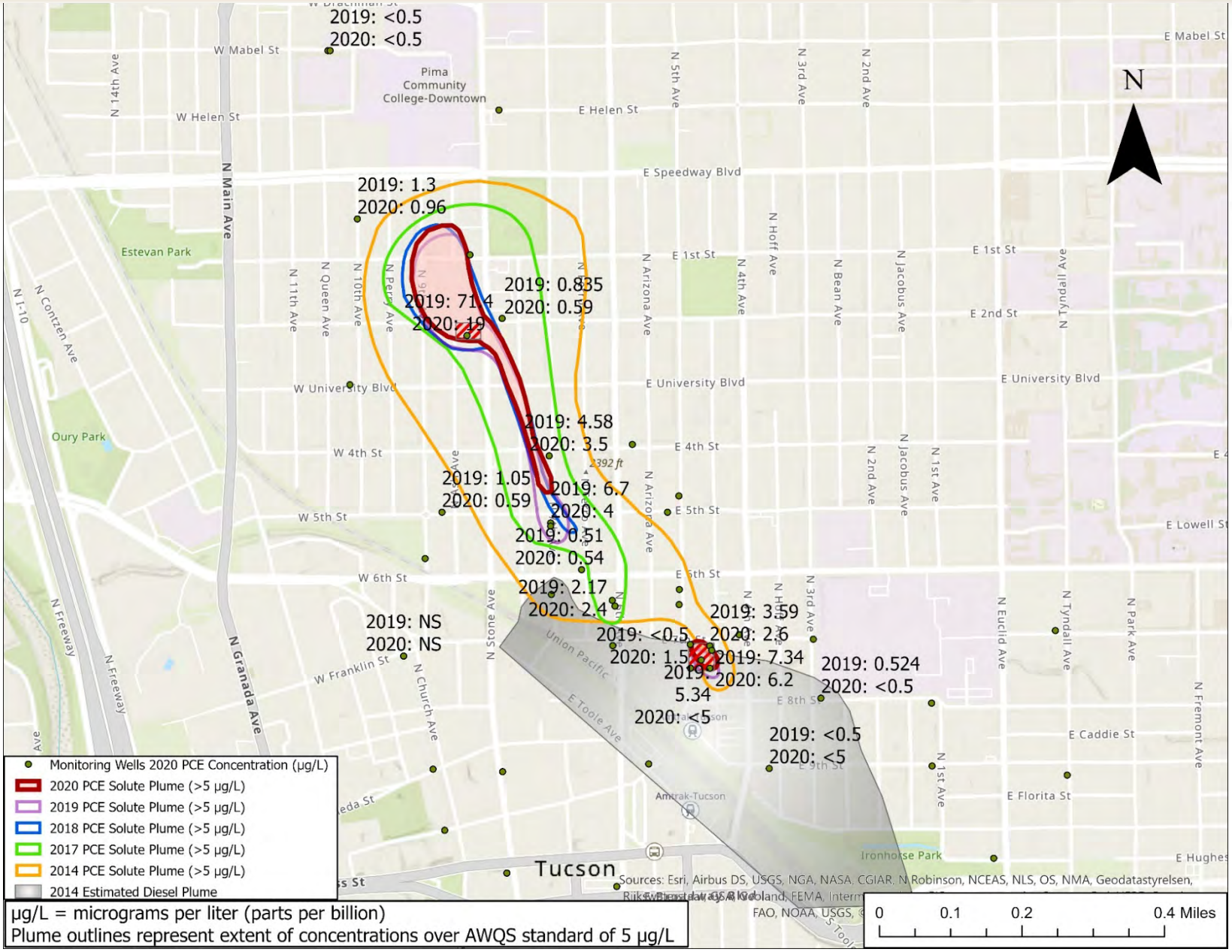
*PRP search proceeds concurrently with RI and FS

**ERAs can occur anytime before a PRAP and can occur concurrently with the rest of phases

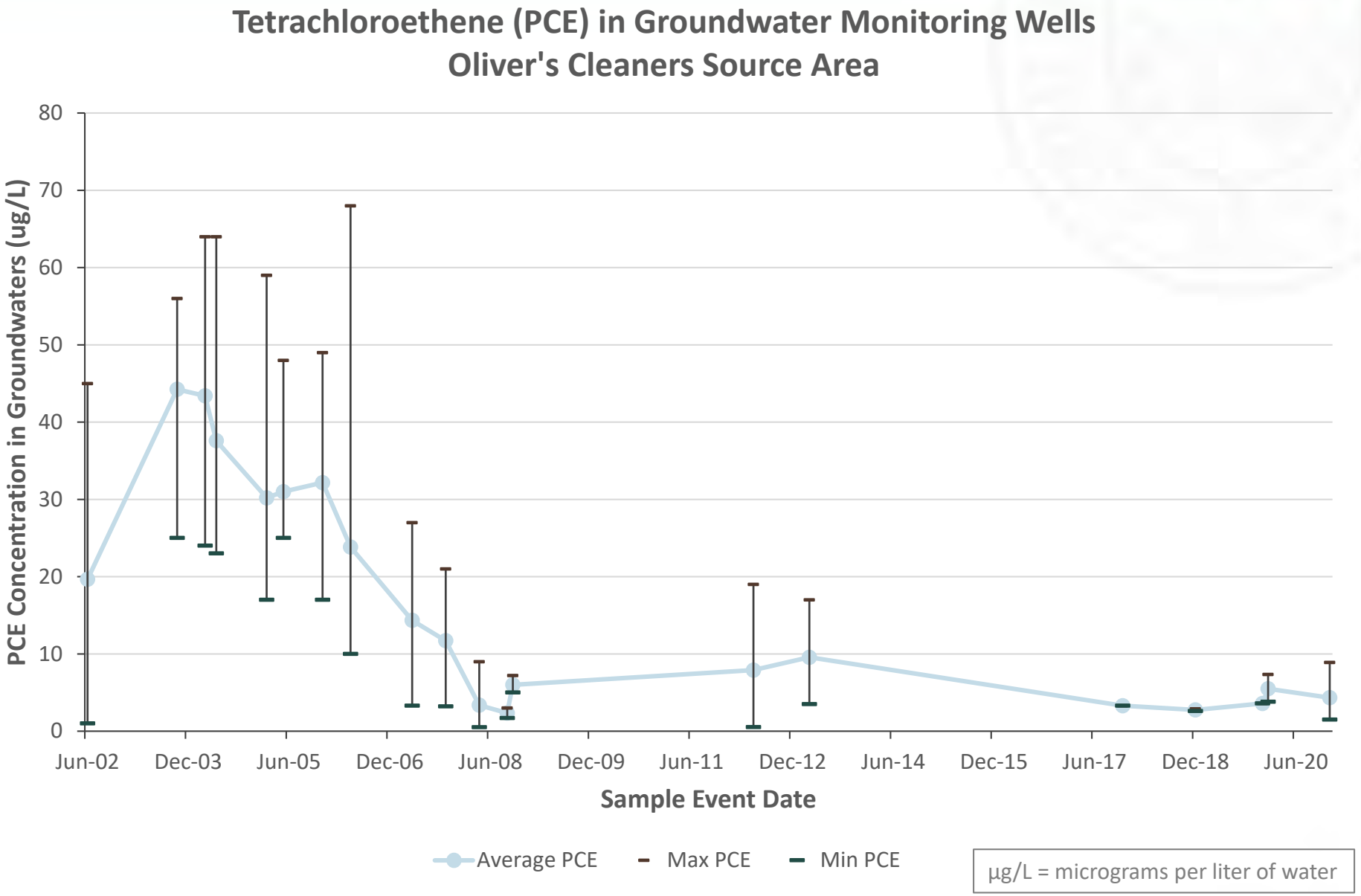
7th Street and Arizona Avenue WQARF Site Area



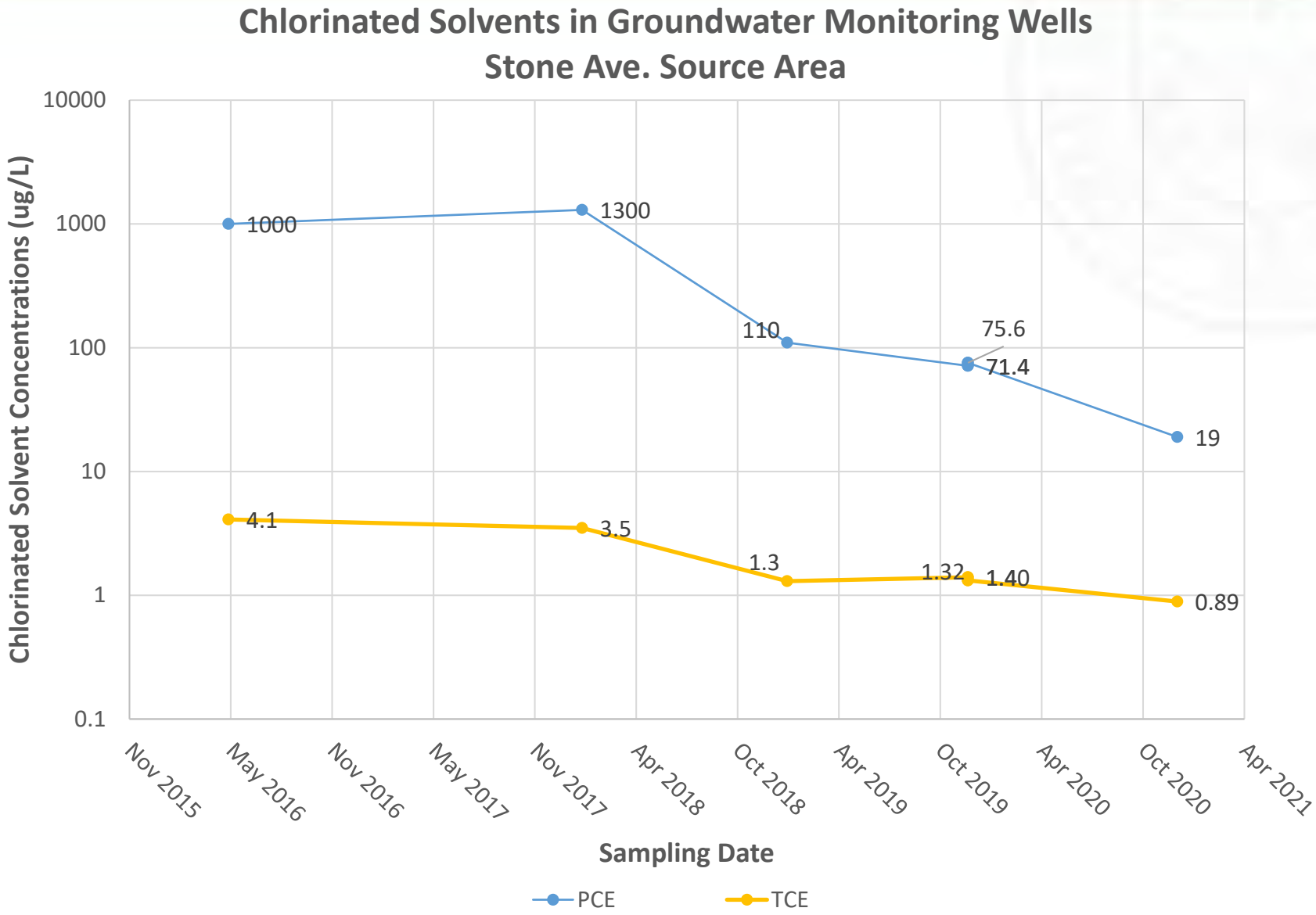
Tetrachloroethene (PCE) in the Perched Aquifer



Groundwater Contaminants: Oliver's Cleaners



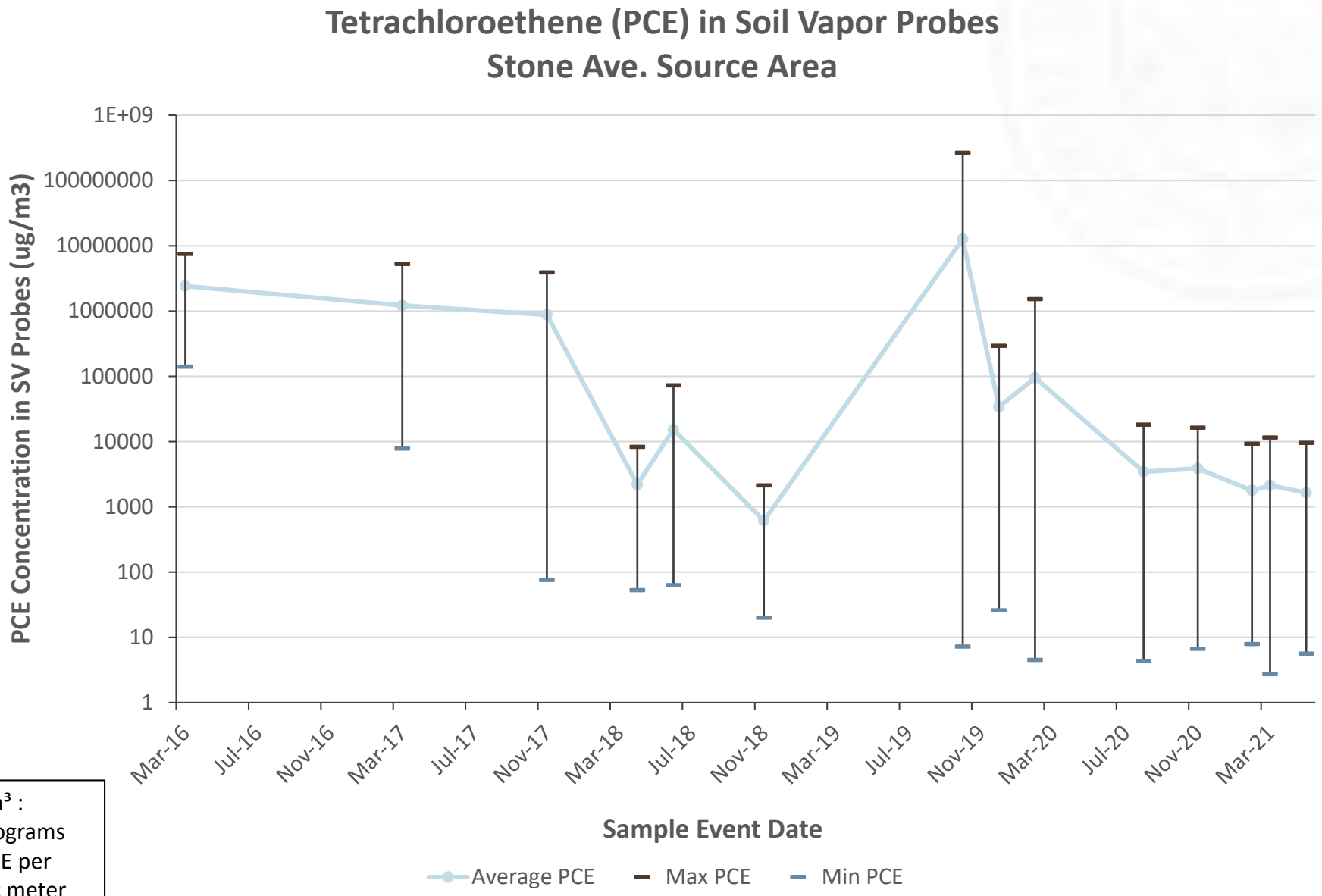
Groundwater Contaminants: Stone Ave. Source



µg/L: micrograms per liter of water, or parts per billion PCE: tetrachloroethene TCE: trichloroethylene

Stone Ave. Source: Soil Vapor Probe Locations

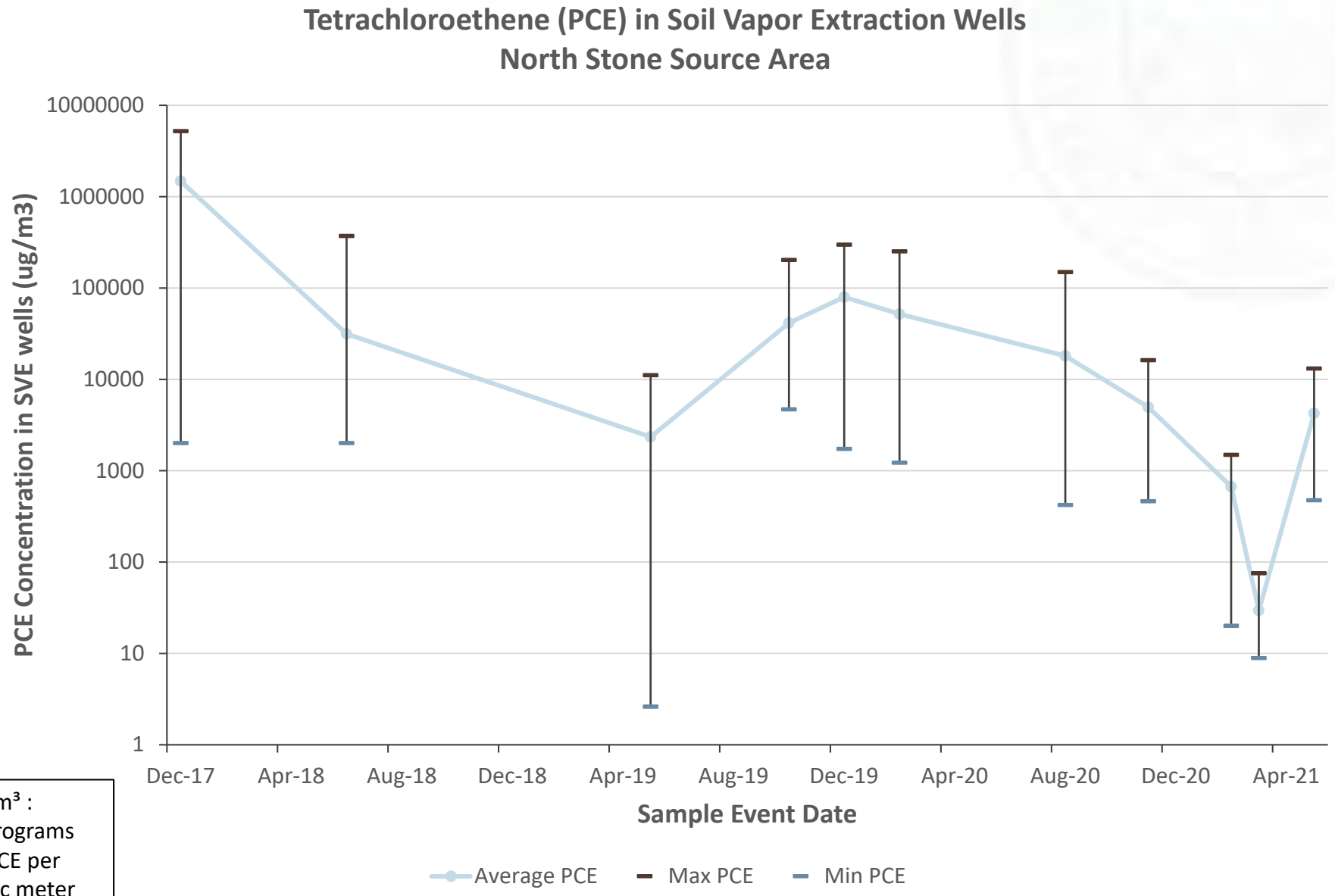
PCE in Soil Vapor Probes at Stone Ave. Source



µg/m³ : micrograms of PCE per cubic meter of soil vapor

Stone Ave Source: SVE System Layout

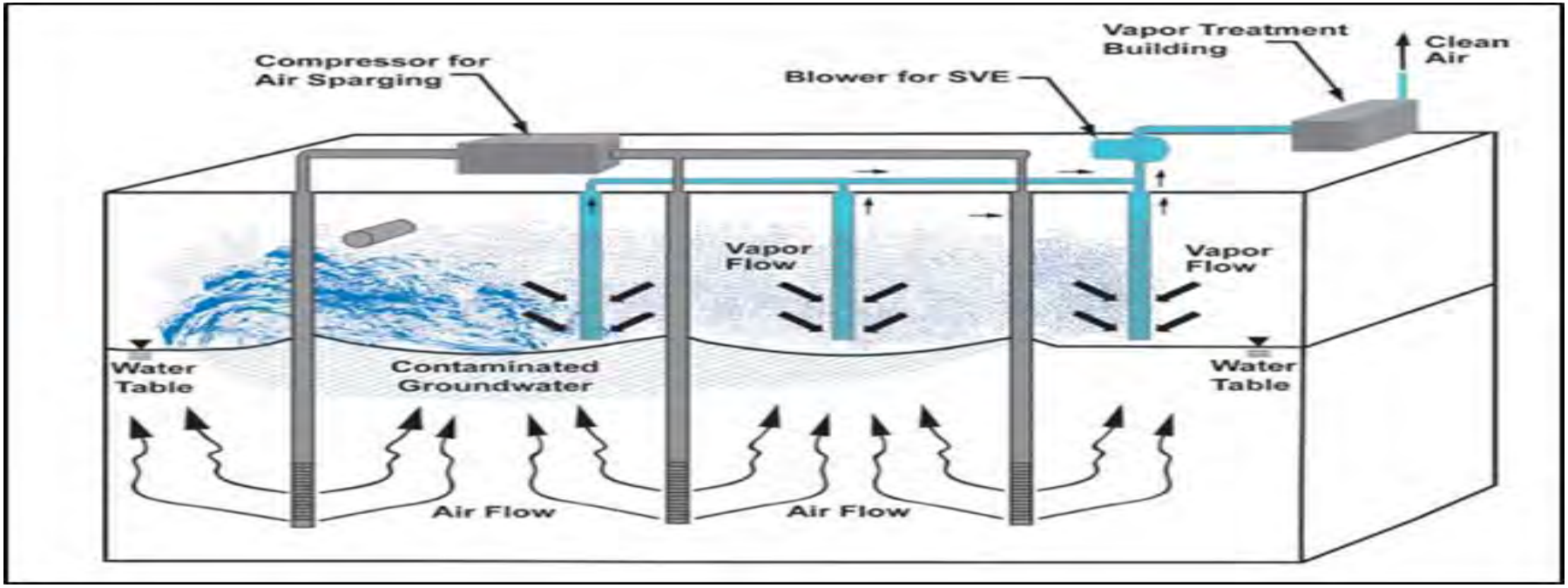
PCE in Soil Vapor Extraction Wells at Stone Ave. Source



µg/m³ : micrograms of PCE per cubic meter of soil vapor

7th Street and Arizona Avenue – Plan for Active Remediation

- Soil Vapor Extraction and Air Sparging at source properties
  - SVE to remove contaminated soil vapor.
  - VOCs are captured by granular activated carbon.
  - No Air Sparging planned at the Stone Avenue source.
  - Active treatment planned for 5 years.



Source: US EPA

7th Street and Arizona Avenue – Current Operations

- SVE System at Stone Ave. source property is operational
  - Two deep SVE wells converted to passive air inlets.
  - System operating on a periodic on/off schedule to promote solvent release from fine particles.
- SVE/Air Sparging system at former Oliver's property on hold pending funding.

7th Street and Arizona Avenue – Project Costs

- Cost of Remediation so far: $2.88 million
  - Includes work conducted April 2000 to June 2021
- Projected Costs for Fiscal Year 2022: $140,000
  - Annual groundwater monitoring/sampling
  - Operation, sampling, and maintenance of N Stone SVE system

Questions? Comments?

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Thank You!

Stone Avenue and Grant Road Water Quality Assurance Revolving Fund (WQARF) Site Operation, Maintenance, and Monitoring (OMM) Activities and Updates

September 15, 2021

Community Advisory Board (CAB) Meeting

Gianna Trujillo, Project Manager

ADEQ Arizona Department of Environmental Quality

Stone & Grant WQARF Site Location

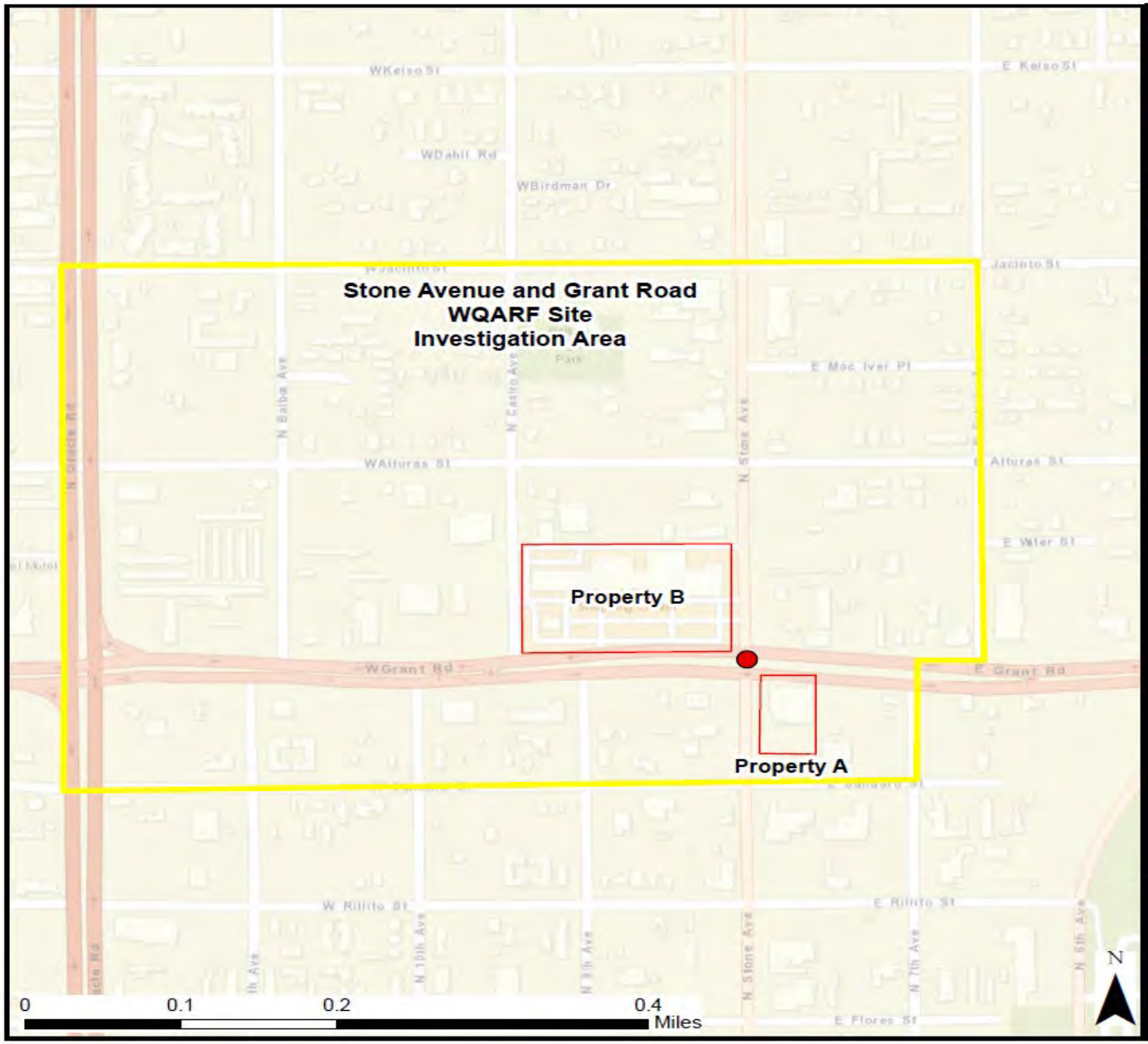

Figure 1
Site Location and Investigation Area
Stone Avenue and Grant Road WQARF Site, Tucson, AZ

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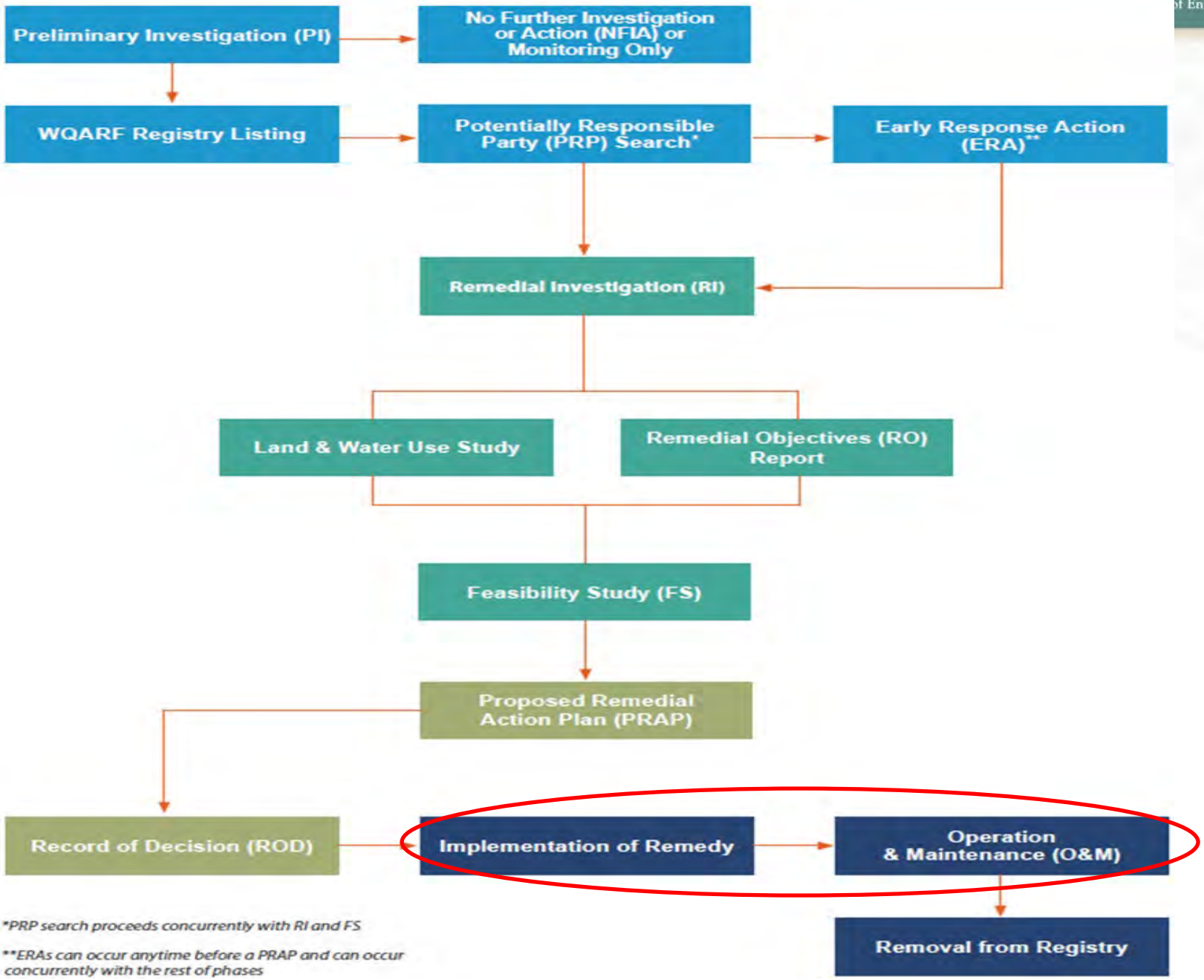
WQARF PHASES



*PRP search proceeds concurrently with RI and FS

**ERAs can occur anytime before a PRAP and can occur concurrently with the rest of phases

Site Summary

- Contaminant of Concern:
  - Tetrachloroethene (PCE)
- Impacted Media:
  - Soil up to 10 ft bgs
  - Soil Vapor up to 100 ft bgs
- Exposure Pathway:
  - Vapor intrusion to indoor air is the primary concern for exposure to PCE vapors via inhalation from source areas

ft bgs – feet below ground surface

Operation, Maintenance, and Monitoring (OMM) Activities

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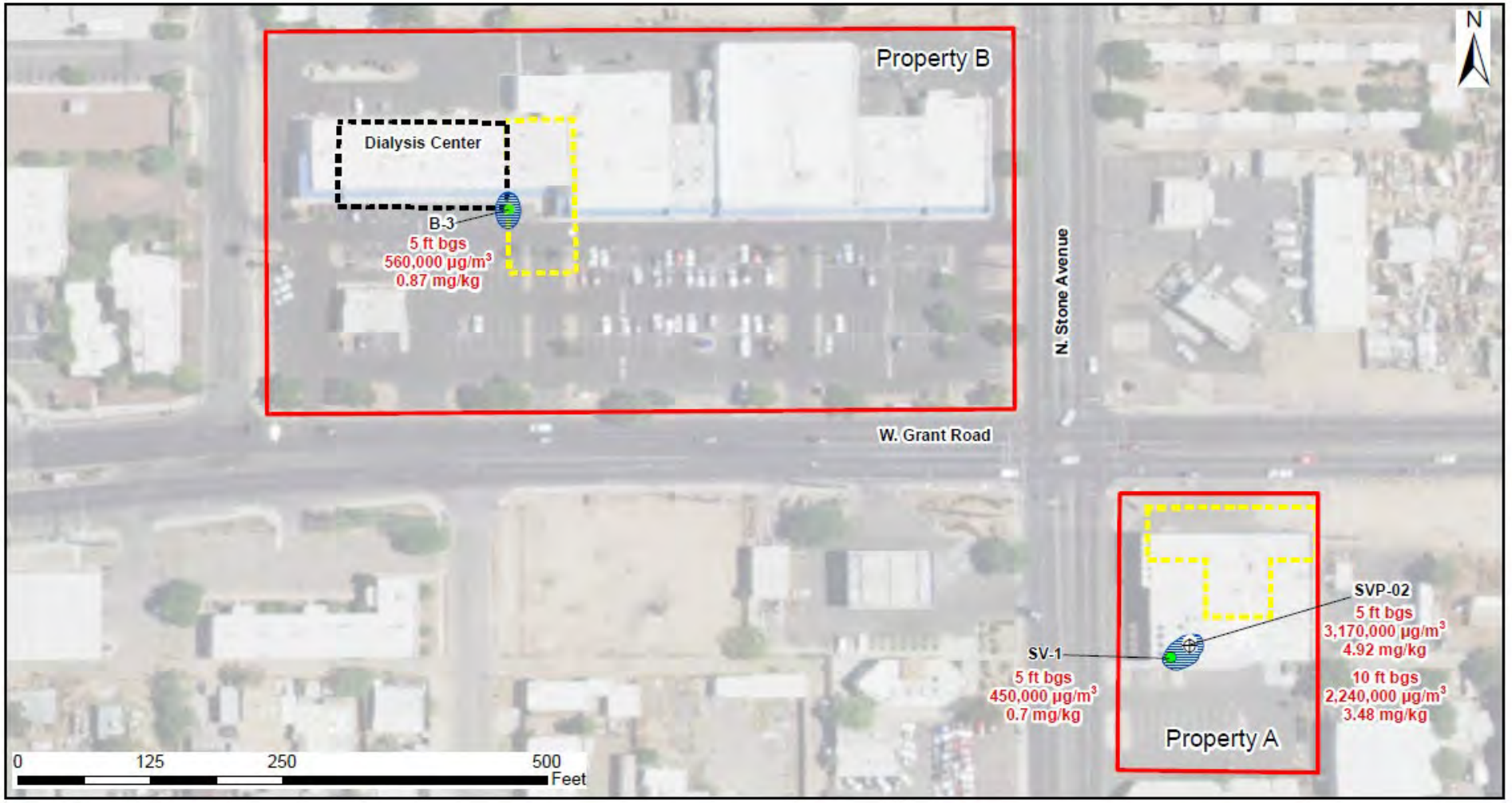
Remediation Areas



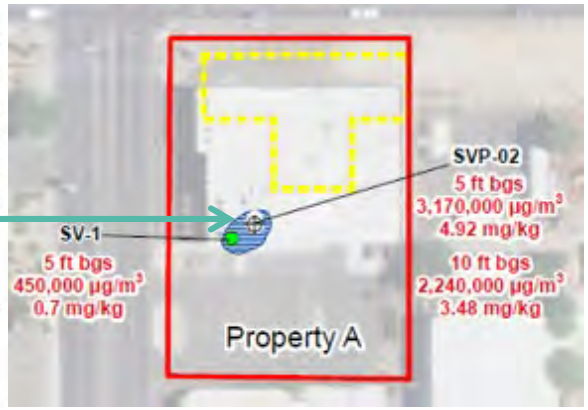
Legend

- Property Boundary
- Residential SRL Exceedance (Soil Equivalents) for PCE
- Sensitive Population
- Historic Dry Cleaner Locations
- Temporary Soil-Gas Sampling Location
- Dedicated Soil-Gas Monitor

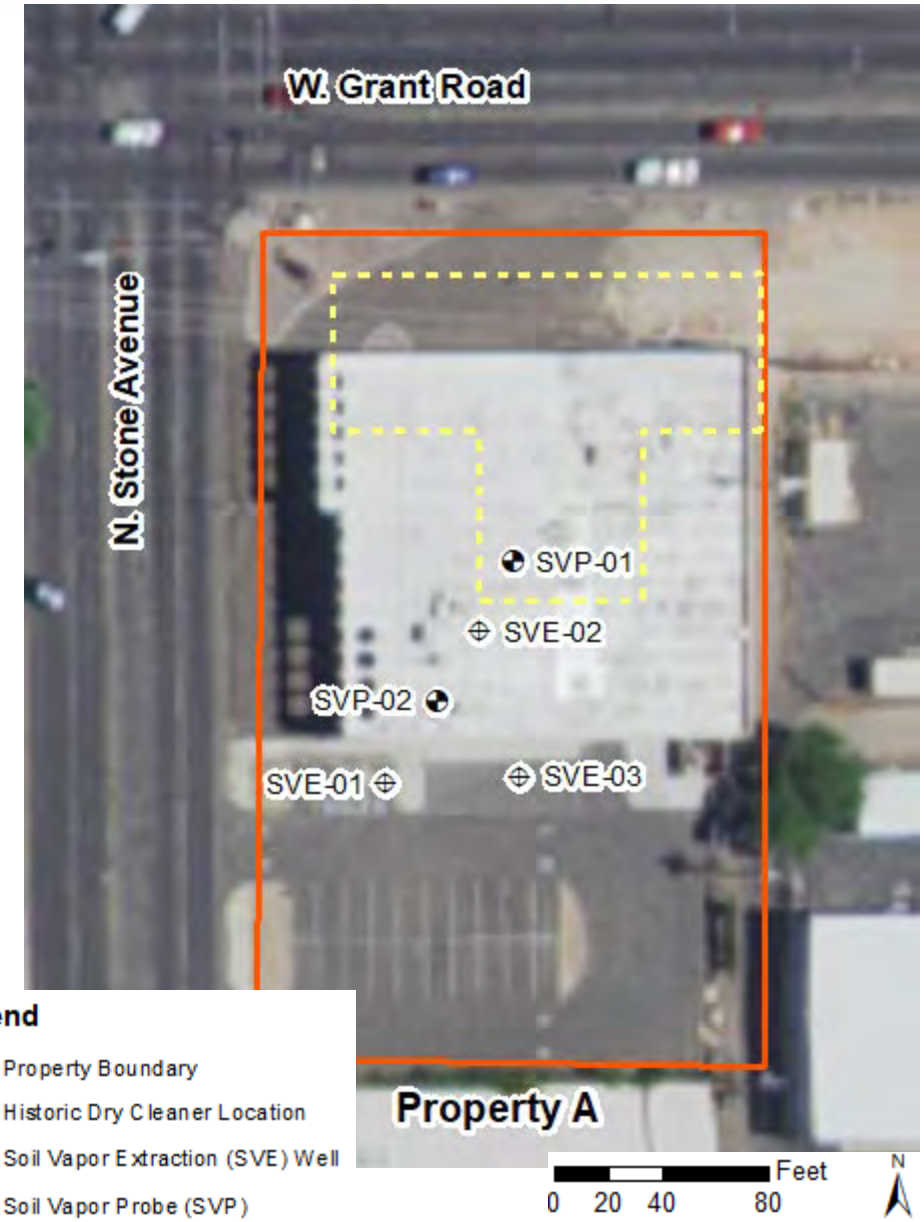
Figure 2

Site Remediation Areas
Stone Avenue and Grant Road WQARF Site
Tucson, Arizona

Property A – Soil Vapor Extraction (SVE) Site



Property A – Site SVE Wells and Data Fiscal Year 2021



Mointoring Point	Depth	Date	PCE	TCE
SVP-01	5	9/1/2020	750	<2.6
	5	4/27/2021	5,000	<12
	10	9/1/2020	640	<2.5
	10	4/27/2021	4,800	<12
SVP-02	5	9/1/2020	3,300	<14
	5	4/27/2021	480,000	<12
	10	9/1/2020	450,000	<3,200
	10	4/27/2021	280,000	<12

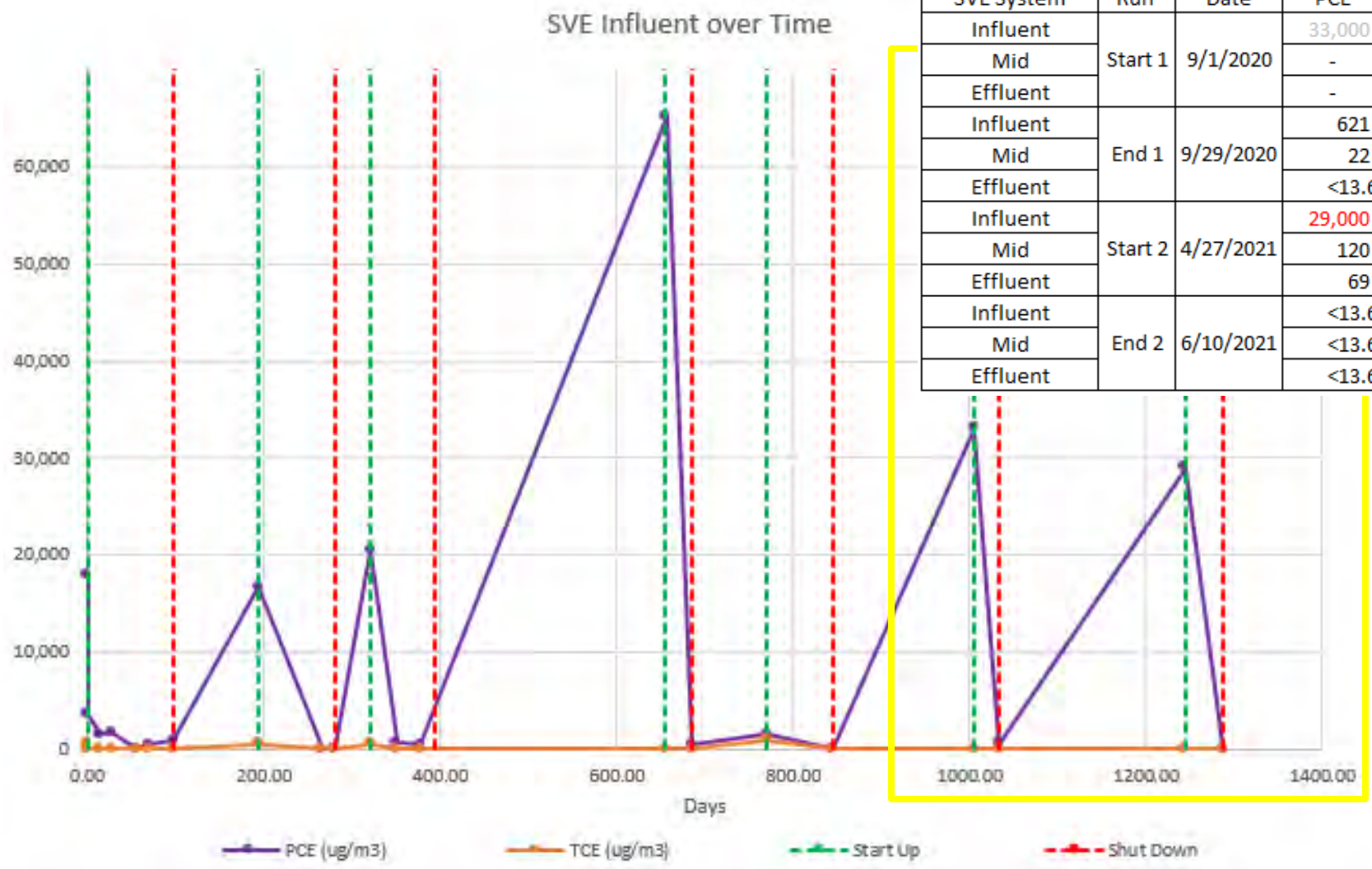
Extraction Well	Depth	Date	PCE	TCE
SVE-02	13	9/1/2020	42,000	<230
	13	4/27/2021	7,800	<26
	20	9/1/2020	27,000	<160
	20	4/27/2021	3,000	<10
SVE-03	5	9/1/2020	15,000	<110
	5	4/27/2021	4,800	<19
	20	9/1/2020	6,100	<24
	20	4/27/2021	2,200	<7.3

Red Text indicates an exceedance of the applicable vapor intrusion screening level (VISL).

Property A – Soil Vapor Extraction (SVE) Unit Data

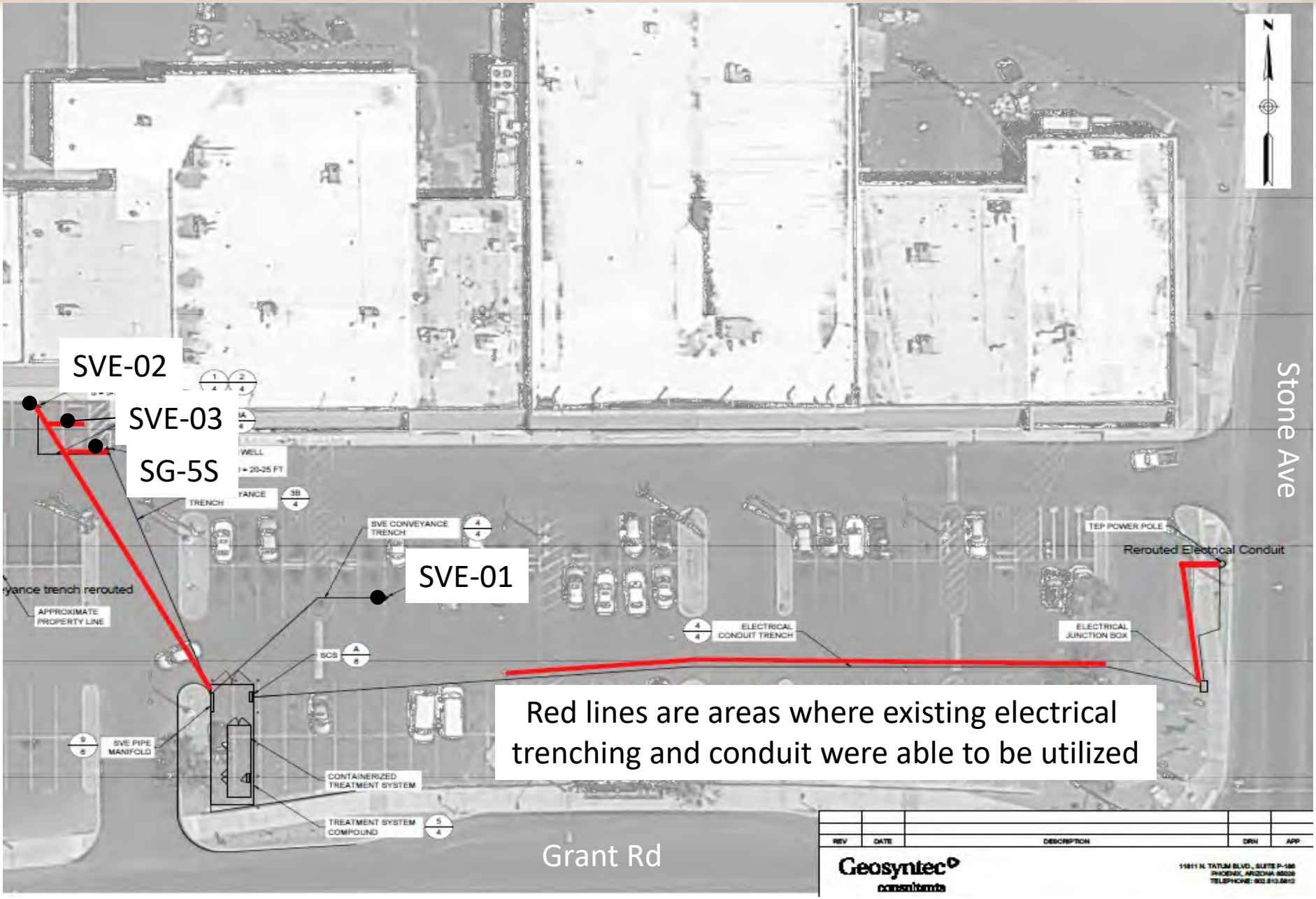
- Total Estimated Mass removed is 42 pounds of PCE as of June 2021.

SVE System	Run	Date	PCE	TCE
Influent	Start 1	9/1/2020	33,000	-
Mid			-	-
Effluent			-	-
Influent	End 1	9/29/2020	621	<5.37
Mid			22	<5.37
Effluent			<13.6	<5.37
Influent	Start 2	4/27/2021	29,000	<74
Mid			120	<8.7
Effluent			69	<9.8
Influent	End 2	6/10/2021	<13.6	<5.37
Mid			<13.6	<5.37
Effluent			<13.6	<5.37



Property B – SVE Site

Property B – Site SVE Wells



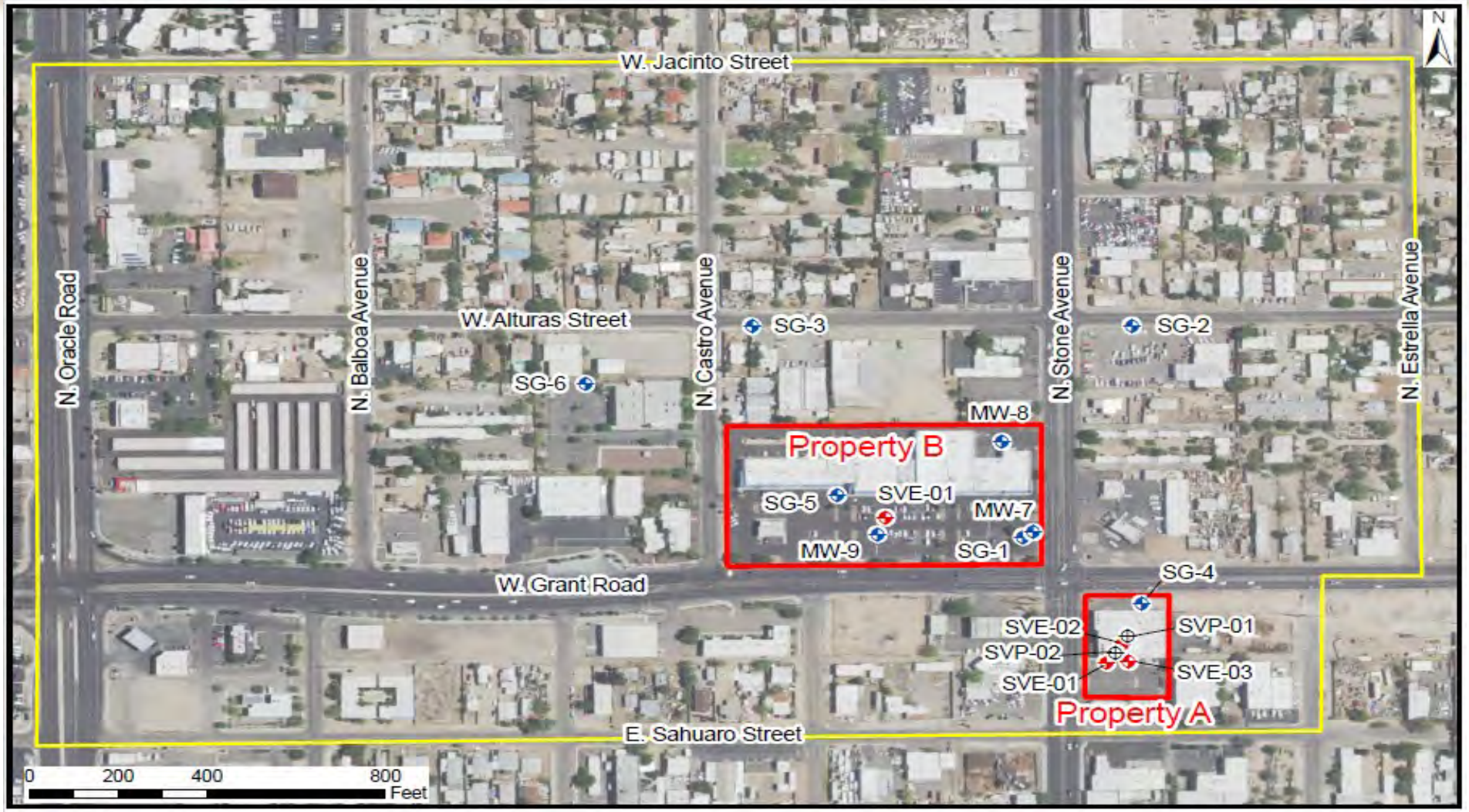
Fiscal Year 2021 SVE Activities Recap

- October 2020: Installed SVE extraction wells at Property B.
- 2020 – 2021: TEP and City of Tucson permitting / application to get a power source and construct Property B SVE System.
- March – May 2021: Installation, trenching, tie ins, etc. for Property B SVE System.
- September 2021: Start up of Property A SVE.
- Current: TEP electrical connection and start up of Property B SVE pending.

Fiscal Year 2021 Annual Monitoring

- October 2020
  - Groundwater Monitoring
    - Ensure no impacts to regional groundwater
  - Soil Vapor Monitoring
    - Monitor PCE and TCE in subsurface across the Site and off property
    - Monitor trends

Monitoring Locations



Legend

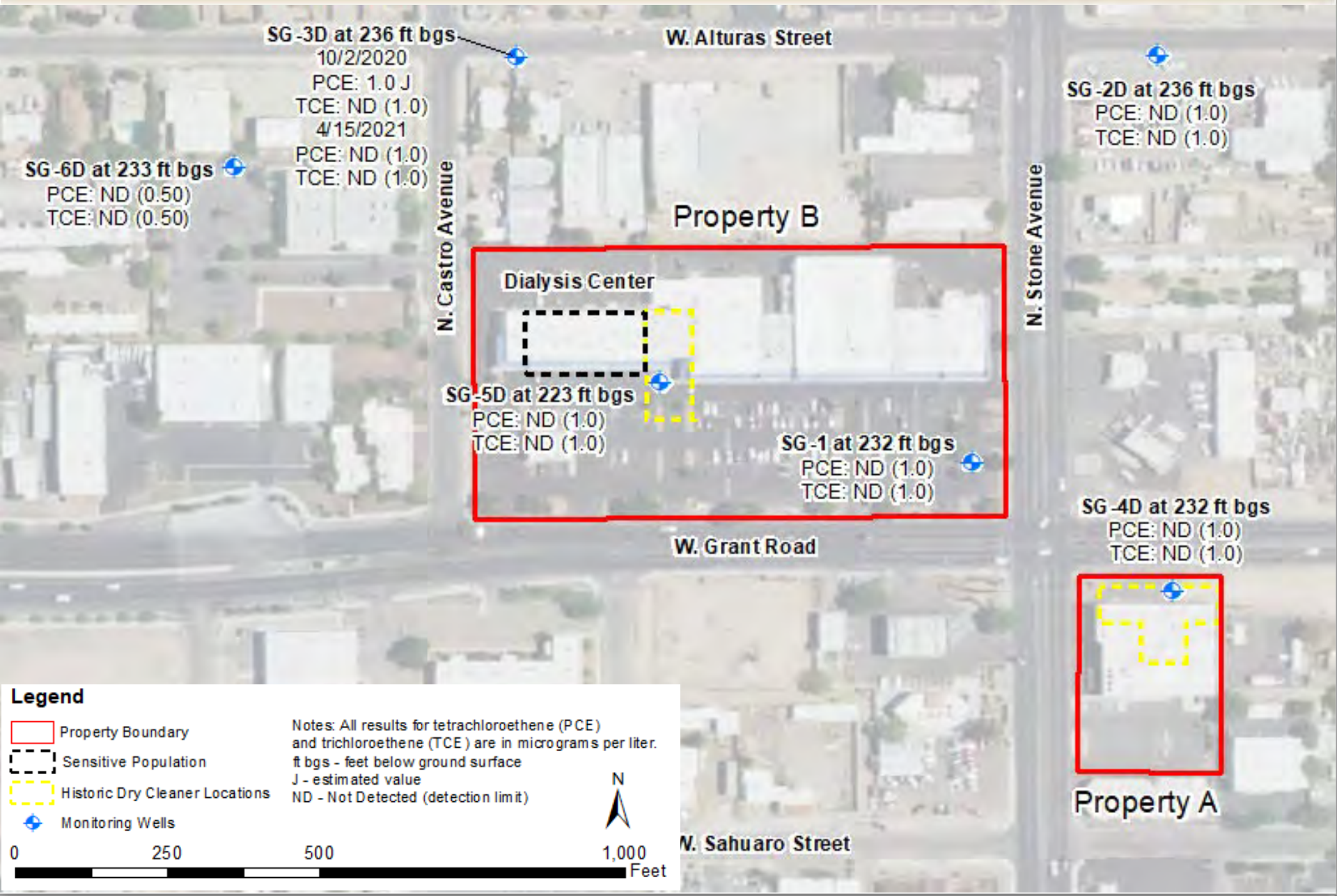
- Site Investigation Area
- Property Boundary
- Dedicated Soil-Gas Monitor
- SVE Well
- Groundwater Monitoring Wells (Shallow and Dual Nested)

Figure 4

Monitoring Locations
Stone Avenue and Grant Road WQARF Site
Tucson, Arizona

Annual Soil Vapor Sampling

Annual Regional Aquifer Sampling



Fiscal Year 2022 Anticipated Activities

- SVE Operations
  - Property A: September 2021 and May 2022
  - Property B: October* 2021 to June 2022
- Soil Vapor Sampling
  - Annually across the Site: September 2021
  - Property A: Quarterly
  - Property B: Monthly
- Groundwater Sampling
  - Annually across the Site: September 2021
- Indoor Air Sampling
  - January (winter) and May (summer) 2022

*Pending on TEP power pole update

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